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stand in the most immediate relation to the etiology. The etiology is the same as that of multiple neuritis, and all the causes which may bring on multiple neuritis lead at times also to this form of multiple disturbance. As multiple neuritis comes on with special frequency in drinkers so this form of disease comes on very frequently in alcoholic neuritis and alcoholic paralysis.

The mental disturbance above described has received some attention by different writers, first by Magnus Huss, but no one saw in the mental disease anything peculiarly connected with the neuritis, but all held the psychosis to be simply a complication of the disease under the influence of alcohol. Korsakoff claims to have been the first to show that a completely analogous mental disturbance develops in cases of multiple neuritis where alcohol can play absolutely no rôle as an etiological factor, and he has published fourteen cases of multiple neuritis of non-alcoholic source with a clearly marked mental disturbance. These observations lead Korsakoff to conclude that this mental disturbance belongs to multiple neuritis and to ascribe its origin to the influence of the same pathogenic character which produce multiple neuritis. These conditions do not always appear to bring on the mental disturbance in the same degree as the neuritis, for in many cases the neuritic symptoms appear more marked because the pathogenic agent has worked more on the peripheral nervous system, while in other cases the mental symptoms predominate in consequence of the pathogenic agent influencing the brain by preference. In still other cases the cerebral and peripheral disturbances are marked in almost equal manner.

Turning to the etiology of the fourteen cases published by Korsakoff we find the sources of the disease to be very different, such as the presence of a dead foetus, puerperal septicaemia, accumulation of feces, typhoid tuberculosis, diabetes mellitus, lymphadenoma, and the breaking down of a tumor. Adding to these that this form of disease also develops in alcoholism, poisoning with arsenic, lead, sulphuric acid, carbonic oxide, etc., we see that the sources of the disease are extremely varied. Still it is easy to see that there is something in common in them all, since in all these cases the composition of the blood is altered poisonous substances are accumulated in the blood, and it is in the highest degree probable that it is these which poison the nervous system, in individual cases the peripheral nervous system being puerperally affected, in other cases the central nervous system, but often both in the same degree. It is hard to say what these poisonous substances are, but in most cases they belong to the ptomaines or leucomaines, which have reached the organism from the outside or have developed in it under favorable conditions. Korsakoff has very properly named all of them *toxaemic cerebropathies* (*cerebropathie psychica toxæmica*). They may also be called *polyneuritic psychoses* (*psychosis polyneuritica*), but it must be borne in mind that cases of this kind of mental disturbance may develop in which the symptoms of multiple degenerative neuritis may be poorly marked and thus may be overlooked. The pathological anatomy of the disease is still not sufficiently explained, but the presence of multiple degenerative neuritis may be looked on as proved.

*Ueber eine besondere Form psychischer Störung combinirt mit multipler Neuritis.* S. S. KORSAKOW, Arch. f. Psych., 1890, xxi Band, 3 Heft. p. 669.

The present article is mostly taken up with a consideration of the etiology of multiple neuritis, and the author refers to the fact that in the beginning of the year 1887 he advanced the theory that in addition to the poisons that get into the body from the outside and cause neuritis, this may also arise from poisons developing in the body itself—ptomaines and leucomaines. The views of Rosenheim and Leyden on the origin of

multiple neuritis are given, together with those of the French authors, Bouchard, Charin and Roger.

In any disease where the eliminative powers of the body are reduced we may get auto-intoxication from the accumulation of the ptomaines and leucomaines, multiple neuritis, and together with this Korsakoff's *cerebropathia toxæmica*. This has developed in glycosuria, in pyæmia, in tuberculosis, in pyæmia, and after typhoid, after the birth of a fœtus that had undergone decomposition; in this latter case there were absolutely no phenomena of putrefaction to be found on the genital apparatus but the disease had apparently developed directly through absorption of ptomaines in the blood. In the cases cited numerous instances are given which point to the abnormal constitution of the blood; one case developed in connection with leucocythæmia, another in a liver disease, a third with the breaking down of a neoplasm. Korsakoff would ascribe to the ptomaines or leucomaines resulting from the activity of the tubercle bacillus in tuberculosis the physical disturbance so frequently found in this disease, contrary to the view of Wood who would account for the disease simply by the great exhaustion produced. In view of all these facts Korsakoff calls the cerebropathy described a toxæmic cerebropathy, since he assumes that all cases of this disease stand in connection with some one toxæmia. In individual cases the fundamental toxæmia influences the peripheral nerves alone, in other cases it affects the cord, and in still others the brain. These latter cases being the ones in which the mental disturbance is produced. Why in the one case the affection is confined to the peripheral nerves while in another case the brain is a fellow sufferer is unknown. Apparently this depends on the affinity of the poison circulating in the blood, and in part on the dissimilar powers of resistance of the nervous system in different men. The fact that physical disturbance in question has been observed to be especially frequent in multiple neuritis of alcoholic origin may well be conditioned on the fact that the brain has become particularly susceptible through the drinking of alcohol.

The nature of the poison circulating in the blood also apparently has something to do with this difference, for while there is almost always a disturbance in alcoholic multiple neuritis, yet in the neuritis after diphtheria there is no known case where a psychosis has developed.

In his earlier work on alcoholic neuritis Korsakoff explains this excessive vulnerability of the brain through an apparent alteration of the lymph apparatus in general, and especially of the connective tissue, this alteration establishing itself in the nervous system in alcoholism, and in consequence each accumulation of toxic products in the blood or lymph leads much quicker to poisoning than in normal conditions. This explains why multiple neuritis and cerebropathies are especially frequent in the tuberculosis of drinkers, and also why in such cases neuritides and cerebropathies break out in consequence of strong emotions or marked physical exhaustion, the products of fatigue in such cases are not sufficiently eliminated through the lymph and act toxically on the nerve elements. If this is the case, then the designation of such forms of disease as *toxæmic* is not strictly correct since the direct source of the disease is to be looked for not in the blood but in the fluid saturating the tissue elements. In this appears to Korsakoff to lie the real objection to the name adopted by him, yet in default of another the title *cerebropathia psychica toxæmica* seems justified, and to characterize the disease and its genesis.

The article contains the minute clinical reports of six cases. The first that of a woman who gave birth to a dead child in which decomposition had already set in; secondly, an analogous case, the child being healthy but the after-birth being retained; in the third case psychosis followed typhoid; in the fourth case there was specific disease, abuse of

alcohol, malaria and lymphadenoma; in the fifth, probably retrogressive metamorphosis of a fibroma; in the sixth the etiology was doubtful, although alcohol may have had some influence.

The six cases were observed in two years. The first, third and sixth cases recovered, the other three died.

*Ein Fall von polyneuritische Psychose mit Autopsie.* S. S. KORSAKOFF UND W. SERBSKI, Arch. f. Psych., 1891, xxii Band, 1 Heft; 112-134.

The psychosis in this case followed a laparotomy for the removal of a dead fœtus in a case of extrauterine pregnancy. A septic fever developed before the operation, after which the temperature fell perceptibly, although it always remained high.

A week after the operation, in addition to the irritability manifested earlier, there was considerable excitement and a clearly marked weakness of memory for recent events. Consciousness was clear in the beginning, but soon began to be clouded, and at the same time symptoms of weakness in the extremities developed, the tendon reflex disappeared, and the symptoms of multiple neuritis developed.

Although the wound healed the affection of the nervous system increased; the disturbance of memory became more marked, the association of ideas was completely lost, from time to time there was excitement, and hallucinations developed. The paralysis increased, and extended to the upper part of the body, and the patient died from paralysis of the diaphragm. As in the previous cases Korsakoff attributes the disease to the poisoning of the central and peripheral nervous system by the ptomaines circulating in the blood. At the autopsy the characteristic degenerative changes of multiple neuritis were found. The phenomena of multiple degenerative neuritis were found in all the nerves examined with the exception of some cranial nerves. The muscles showed evidences of a degeneration of an irritative character—increased number of nuclei. In the brain nothing was found by the methods used, but Korsakoff thinks that the failure to find any changes in the brain was to be accounted for by the fact that the mental disturbance had existed in the patient only a relatively short time, and that the anatomical substratum of the disturbance did not have time to develop to a sufficient degree to become evident by the methods of investigation employed; possibly also because the cortex was not examined by all the methods.

Korsakoff does not think that the negative result justifies the assumption that the mental disturbances in multiple neuritis is unaccompanied by any changes in the cortex, but he is much more of the view that these changes exist in many cases, and cites as a proof that in his observations on alcoholic neuritis where a characteristic mental disturbance was present a change in the cortex was found, viz: alteration of the vessels, millary extravasations, increase of the connective tissue and spindle cells.

*Polyneuritis und Geistesstörung.* ERNST FRANK. Inaugural Dissertation, University of Bonn, 1890.

Frank reports a case of mental disturbance, to which the phenomena of polyneuritis were added very early. The clinical picture is very similar to the psychoses described by other authors as occurring in multiple neuritis, although some of the symptoms usually present in these psychoses were absent in this case. The author quotes Korsakoff's description of the mental condition. Frank's case presented especially the peculiar disturbance of memory described by Ross. While in almost all cases of psychoses in multiple neuritis, as described by Korsakoff and others, there are still other phenomena, such as delusions, hallucinations, illusions, stupor, and even well-marked delirium tremens, yet these